FOREST PEST LEAFLET 119

Western Tent Caterpillar

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The western tent caterpillar, *Malacosma californicum* (Packard), feeds on many species of deciduous trees and shrubs in the region from the eastern slope of the Rocky Mountains to the Sierra Nevada and the Cascade Range (fig. 1). In New Mexico periodic epidemics have damaged widespread areas of quaking aspen. The larvae feed on the leaves and often completely defoliate the trees.

In general, the diameter growth of aspen is greatly reduced with increasing intensity and frequency of defoliation. The incidence of dead and top-killed trees increases significantly in areas that are heavily defoliated in several consecutive years. The unsightly condition of infested trees and the annoyance created by hordes of crawling larvae are problems in recreational areas.

Hosts

At elevations of more than 8,000 feet, quaking aspen is the favored host of the tent caterpillar. From 1,800 to 3,000 feet, infestations are most serious on cottonwoods (*Populus* spp.) and willows (*Salix* spp.). The caterpillars also feed on apple, pear, plum, and cherry trees, species of ceanothus (*Ceanothus* spp.), antelope bitterbrush (*Purshia tridentata* (Pursh) D.C.), skunkbush sumac (*Rhus trilobata* Nutt.), mountain-mahoganies (*Cercocarpus* spp.), and gooseberries (*Ribes* spp.).

Evidence of Infestation

Infestations of the tent caterpillar are characterized by large, conspicuous "tents" constructed by the larvae along the branches of the host. The size of the tents increases during the summer as the larvae develop. Heavy feeding on quaking aspen results in widespread areas of completely defoliated trees by midsummer (fig. 2).

Description

Tent caterpillar adults vary from pale yellow to light grayish brown or dark reddish brown. Males are generally darker than females. The adult's body is about ¾ inch long.

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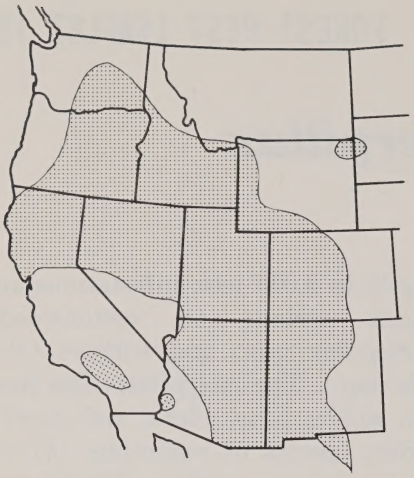

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Figure 1.—Distribution of the western tent caterpillar in the United States (Stehr and Cook, 1968).

The wing expanse of the males is from 1 to 1½ inches, and that of the females is from 1½ to 2 inches. Two lines divide the forewings into three sectors, or bands (fig. 3, *A*).

The eggs are laid in oval-shaped masses that partially encircle small twigs of the host plant (fig. 3, *B*). A mass usually contains from 150 to 250 eggs, which are cemented together and covered by a silvery colored, frothy material that turns gray with time.

When first hatched, the larvae are about ⅛ inch long and nearly uniformly black, with whitish body hairs. The mature larvae are 1¾ to 2 inches long (fig. 3, *C*). The head capsule and sides of the body are pale blue. There is a pale-blue stripe down the middle of the back, bordered on each side by a black stripe interlaced with traces of orange. The light-brownish body hairs are conspicuous. On each segment within the pale-blue lateral stripes are two fairly prominent, black spots and numerous small, interspersing, black specks.

The pupae are from ¾ to 1 inch long and dark reddish brown to black in color. They are enclosed in oval, silken cocoons impregnated with a yellowish powder (fig. 3, *D*).

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Figure 2.—Quaking aspens defoliated by the western tent caterpillar.

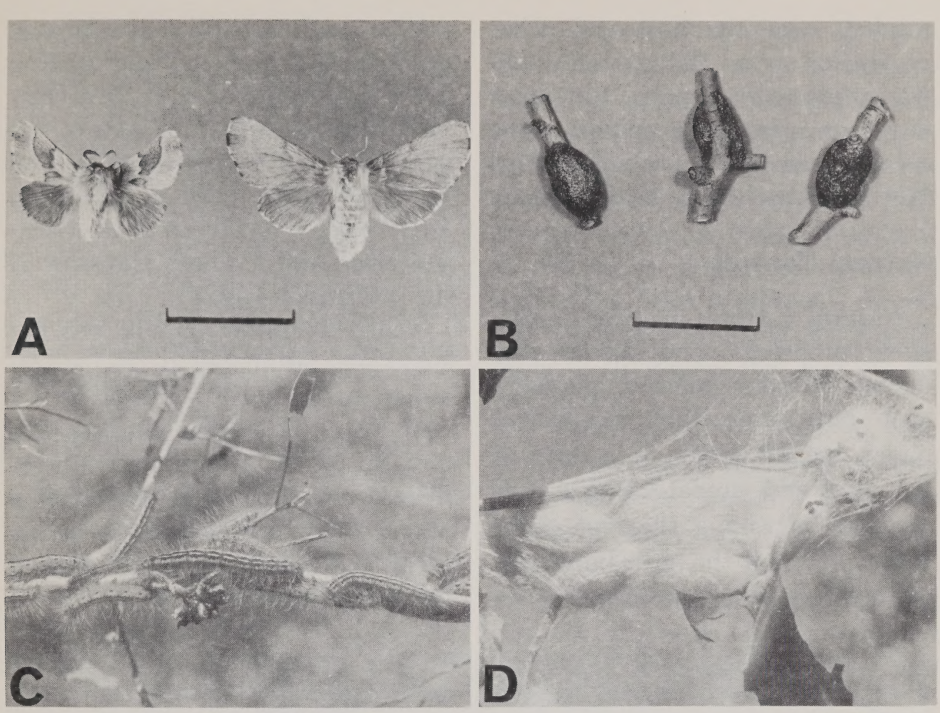

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Figure 3.—Western tent caterpillar: *A*, Adult male (left) and adult female (right), scale line=1 inch; *B*, egg masses, scale line=1 inch; *C*, full-grown larvae; *D*, cocoons.

Life History and Habits

The tent caterpillar has a 1-year life cycle. In aspen stands in the Western United States, adults fly, mate, and lay eggs from mid-July to early August. During this time swarms of moths may be observed in flight during daylight hours in severely defoliated aspen stands. Each female ordinarily produces only one egg mass. Live twigs under ¾ inch in diameter are the preferred sites for egg laying.

Egg development is completed in about 3 to 4 weeks. The insects then pass the winter as completely developed first-instar larvae within the eggs. The larvae start to emerge the following spring, usually during the latter part of May, about the same time the aspen leaf buds begin to burst.

Upon emergence, all the larvae from an egg mass feed gregariously and begin construction of a silken tent in a nearby branch crotch, enlarging the tent as they grow. The tent is used as a resting place between forages for food, as a molting site, and also for protection during periods of unfavorable temperatures and humidity. Larvae from several egg masses on the same branch may join in the construction of a single tent. Larvae mature in 30 to 42 days.

At maturity the larvae lose their gregarious habit, and wander at

random over the host and other vegetation or on the ground, seeking a place to pupate. Two or 3 days are passed in spinning the cocoons and in the prepupal stage. Moths emerge 12 to 18 days later.

Natural Control

Natural factors, including parasites, predators, and disease-producing micro-organisms, generally keep tent caterpillar populations under control. Some 36 species of parasites and predators have been recorded attacking the tent caterpillar. Some of the most important of these are parasitic wasps. *Tetrastichus malacosomae* Girault is a common egg parasite, and *Bracon xanthonotus* (Ashmead) is a common parasite of mature larvae. The eggs of *B. xanthonotus* are laid on the body of the host and hatch in 1 to 2 days. The larvae of the parasite then feed through the skin of the caterpillar (fig. 4).

Tent caterpillar populations are sometimes decimated by the natural occurrence of a virus disease. In recent years, the agent causing this disease has been artificially introduced into apparently disease-free areas. Here it has become established and has effectively controlled the tent caterpillar.

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Figure 4.—Larvae of parasite, *Bracon xanthonotus* (Ashmead), feeding through the skin of a mature tent caterpillar larva.

Applied Control

Infestations of the tent caterpillar may be controlled with aerial applications of carbaryl. Mix the material at the rate of 1¼ pounds of 80-percent wettable powder (sprayable) in enough No. 2 fuel oil to make 1 gallon of spray. Apply at the rate of 1 gallon per acre when most of the larvae are in the first three instars.

Pesticide Precautions

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock and key—out of the reach of children and animals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or when they may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.

WARNING: Recommendations for use of pesticides are reviewed regularly. The registrations on all suggested uses of pesticides in this publication were in effect at press time. Check with your county agricultural agent, State agricultural experiment station, or local forester to determine if these recommendations are still current.

References

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